APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,791	02/06/2006	Luzhou Xu	CN02 0034 US	7166

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EXAMINER
BROOKS, SHANNON

ART UNIT	PAPER NUMBER
2617	

NOTIFICATION DATE	DELIVERY MODE
09/23/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _27 June 2005_.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-49_ is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _1,17,18,33-37,47 and 49_ is/are rejected.
7)☒ Claim(s) _2-16,19-32,38-46 and 48_ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on _27 June 2005_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☒ All   b)☐ Some * c)☐ None of:
      1.☒ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
           application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
      Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
      Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1.   **Claims 1, 17, 18, 33, and 49** rejected under 35 U.S.C. 102(e) as being anticipated by Da Torre (US 2003/0027540 A1).

Consider **Claim 1,** Da Torre teaches a mobile terminal with multi-antenna based on CDMA [0023]-[0024]), comprising: a plurality of groups of radio frequency signal processing modules ([0025]-[0031] and Fig. 2), for transforming received multi-channel radio frequency signals based on CDMA to multi-channel baseband signals ([0025]-[0031]); a multi-antenna module, for combining said multi-channel baseband signals outputted from said plurality of groups of radio frequency signal processing modules into single-channel baseband signals according to control information received one-off when said multi-antenna module enables a multi-antenna baseband processing ([0025]-[0031]); and a baseband processing module, for providing said control information to said multi-antenna module and baseband processing said single-channel baseband signals outputted from said multi-antenna module ([0030]).

Consider **Claim 18,** Da Torre teaches a method for a mobile terminal with multi-antenna based on CDMA, comprising: (a) transforming received multi-channel radio frequency signals based on CDMA to multi-channel baseband signals ([0025]-[0031]); (b) combining said multi-channel baseband signals into single-channel baseband signals

according to control information received one-off when a multi-antenna baseband

processing is enabled ([0025]-[0031]); and (c) baseband processing said single-channel

baseband signals ([0025]-[0031]).

Consider **Claim 49**, Da Torre teaches a mobile terminal, comprising: a transmitting

means, for transmitting signals via an uplink (transmitter of Fig. 2); a receiving means,

wherein the receiving means includes: a plurality of groups of radio frequency signal

processing modules, for transforming received multi-channel radio frequency signals to

multi-channel baseband signals ([0025]-[0031] and Fig. 2); a multi-antenna module,

combining said multi-channel baseband signals outputted from the plurality of groups of

radio frequency signal processing modules into single-channel baseband signals

according to control information received one-off when said multi-antenna module

enables a multi-antenna baseband processing ([0032]-[0050] and Fig. 3); and a baseband

processing module, providing said control information to said multi-antenna module and

baseband processing said single-channel baseband signals outputted from said multi-

antenna module ([0032]-[0050] and Fig. 3).

Consider **Claim 17**, Da Torre teaches the mobile terminal of claim 1, wherein the

terminal is applied to mobile terminals or other mobile wireless communication

terminals, wireless LAN terminals employing one of following standards: WCDMA,

IS95, CDMA2000 ([0022]-[0024]).

Consider **Claim 33**, Da Torre teaches the method of claim 18, wherein the method is

applied to mobile terminals or other mobile wireless communication terminals, wireless

LAN terminals employing one of following standards: WCDMA, IS95, CDMA2000

([0022]-[0024]).

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

3.   The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1,

148 USPQ 459 (1966), that are applied for establishing a background for

determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at
          issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating
          obviousness or nonobviousness.

4.   **Claims 34-37, and 47** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Da Torre (US 2003/0027540 A1) in view of Sebastian (US

2003/0169720 A1).

Consider **Claim 34**, Da Torre teaches a multi-antenna processing device, comprising: a

plurality of spatial filters, each of the plurality of spatial filters setting its working modes

(controlled by the control parameter) according to received instruction, and processing

multi-channel baseband signals according to received information related to spatial

features of signals of each specific path to separate signals of said each specific path from

mixed signals ([0032]-[0050] and Fig. 3); a combiner, for combining signals outputted

from each of said spatial filters according to received synchronization information (phase

information, [00036]) and said instruction ([0032]-[0050]); except that it does not

specifically teach a synchronization module, for providing said information related to

spatial features of signals of each specific path to the plurality of spatial filters according

to said instruction and said input multi-channel baseband signals, and providing said

synchronization information to said combiner ; and a controller, for providing said

instruction to said synchronization module, the plurality of spatial filters and said

combiner according to received control information.

Da Torre teaches a module that provides phase information to provide to a combiner but

does not specifically teach a synchronization module. However, Sebastian teaches a

synchronization module (carrier recovery module, [0122], [0126], [0130]-[0131], and

[0135]-[0136]) for providing said information related to spatial features of signals of each

specific path to the plurality of spatial filters according to said instruction ([0136]) and

said input multi-channel baseband signals, and providing said synchronization

information to said combiner ([0122], [0126], [0130]-[0131], [0135]-[0136], and Figs.

11b and 12b) ; and a controller (controller in carrier recovery module, for controlling

synchronization) for providing said instruction to said synchronization module, the

plurality of spatial filters (separating the composite signals, [0136]) and said combiner

according to received control information([0122], [0126], [0130]-[0131], [0135]-[0136],

and Figs. 11b and 12b).

Therefore, it would have been obvious to one skilled in the art at the time of the invention

to incorporate the teachings of Sebastian into Da Torre to aid in the synchronization

process ([0122], [0126], [0130]-[0131], [0135]-[0136], and Figs. 11b and 12b).

Consider **Claim 35**, Da Torre teaches the device of claim 34, wherein said controller

includes a time alignment means, for time-aligning said signals outputted from each of

the plurality of spatial filters(phase control, [0036]-[0050]).

Consider **Claim 36**, Da Torre teaches a multi-antenna processing device, comprising: a

plurality of processing modules corresponding to a plurality of transmit antennas in a

wireless communication system, receiving and processing signals from the plurality of

transmit antennas, wherein each of said processing modules corresponding to transmit

antennas is composed of a group of spatial filters (Fig. 3, item 314), and receives and

processes signals from a specific transmit antenna, wherein said group of spatial filters

includes a plurality of spatial filters, each setting its working mode according to received

instruction (according to a control parameter) and processing multi-channel baseband

signals according to received information related to spatial features of signals of each

specific path to separate signals of each specific path mixed signals ([0032]-[0050] and

Fig. 3); a combiner, for combining signals outputted from said each group of spatial

filters according to received synchronization information and said instruction ([0032]-

[0050]); except that it does not specifically teach a synchronization module, for providing

said information related to spatial features of signals of each specific path ([0136]) to said

each group of spatial filters in said each processing module corresponding to transmit

antenna according to said instruction and said input multi-channel baseband signals, and

providing said synchronization information related to signals transmitted by the plurality

of transmit antennas to said combiner ([0122], [0126], [0130]-[0131], [0135]-[0136], and

Figs. 11b and 12b); and a controller, for providing said instruction to said

synchronization module, the plurality of spatial filters (separating the composite signals,

[0136]) in said each processing module corresponding to transmit antennas and said

combiner according to received control information ([0122], [0126], [0130]-[0131],

[0135]-[0136], and Figs. 11b and 12b).

Da Torre teaches a module that provides phase information to provide to a combiner but

does not specifically teach a synchronization module. However, Sebastian teaches a

synchronization module (carrier recovery module, [0122], [0126], [0130]-[0131], and

[0135]-[0136]), for providing said information related to spatial features of signals of

each specific path to said each group of spatial filters in said each processing module

corresponding to transmit antenna according to said instruction and said input multi-

channel baseband signals, and providing said synchronization information related to

signals transmitted by the plurality of transmit antennas to said combiner ([0122], [0126],

[0130]-[0131], [0135]-[0136], and Figs. 11b and 12b); and a controller, for providing said

instruction to said synchronization module (controller in carrier recovery module, for

controlling synchronization), the plurality of spatial filters in said each processing module

corresponding to transmit antennas and said combiner according to received control

information([0122], [0126], [0130]-[0131], [0135]-[0136], and Figs. 11b and 12b) .

Therefore, it would have been obvious to one skilled in the art at the time of the invention

to incorporate the teachings of Sebastian into Da Torre to aid in the synchronization

process ([0122], [0126], [0130]-[0131], [0135]-[0136], and Figs. 11b and 12b).

Consider **Claim 37**, Da Torre teaches the device of claim 36, wherein said combiner

includes: a time alignment means, for time-aligning signals outputted from each of said

spatial filters (combiner controller applying phase information to received antenna filters

to improve performance, [0032]-[0050]).

Consider **Claim 47**, Sebastian teaches the device of claim 35, wherein said combiner

includes: a plurality of delayers, delaying each of the output signals from the plurality of

spatial filters to obtain synchronized signals under the control of the synchronization

module ([0113] and Figs. 7C and 7D); and a combiner, for combining the synchronized

signals delayed by said a plurality of delayers (Fig. 9B).

Allowable Subject Matter

5.   Claims 2-16, 19-32, 38-46, and 48 are objected to as being dependent

upon a rejected base claim, but would be allowable if rewritten in independent

form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to:**

    Commissioner for Patents

    P.O. Box 1450

Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window

Randolph Building

401 Dulany Street

Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shannon Brooks whose telephone number is (571) 270-1115. The examiner can normally be reached on 7:30a.m. to 5p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist/customer service whose telephone

number is (571) 272-2600.

/Shannon R. Brooks/

Examiner, Art Unit 2617

Shannon Brooks

September 17, 2009

/NICK CORSARO/

Supervisory Patent Examiner, Art Unit 2617